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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/787,233	04/25/2001	Masahito Nishiura	F-6892	7575

7590

04/16/2003

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EXAMINER

SCALTRITO, DONALD V

ART UNIT

PAPER NUMBER

1746

DATE MAILED: 04/16/2003

Please find below and/or attached an Office communication concerning this application or proceeding.

mk-7

Office Action Summary

Application No.		Applicant(s)	
09/787,233		NISHIURA ET AL.	
Examiner		Art Unit	
Donald V Scaltrito		1745	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 25 April 2001.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-31 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1, 3, 4, 10-16, 18-21, 25-27 and 29-31 is/are rejected.
- 7) ☒ Claim(s) 2, 5-9, 22-24 and 28 is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on _____ is: a) ☐ approved b) ☐ disapproved by the Examiner.
If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

- 13) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
* See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

- | | |
|------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) Paper No(s). _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO-1449) Paper No(s) <u>3</u> | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Claim Rejections - 35 USC § 112

The following is a quotation of the first paragraph of 35 U.S.C. 112:

The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

Claims 1, 3, 10-16, 18-20 & 29-31 rejected under 35 U.S.C. 112, first paragraph, as containing subject matter which was not described in the specification in such a way as to enable one skilled in the art to which it pertains, or with which it is most nearly connected, to make and/or use the invention. The Examiner contends that these claims are broader than the enabling disclosure. The Examiner would like to point out that the base claims should be limited to a trivalent or tetravalent boron atom containing polymer, as disclosed on page 2 of the specification since the specification apparently fails to provide support for any polymer containing boron.

The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

Claims 3 & 4 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention. Claims 3 & 4 rely on the polymeric formulas according to Claims 1 or 2. However, in Claim 1, no formula is given and therefore, Claims 3 & 4 are rendered vague and indefinite.

Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

Claims 1, 3, 18-20 & 29-31 are rejected under 35 U.S.C. 102(b) as being anticipated by Angell et al. (WO 97/16862).

Angell et al. disclose boron containing wide electrochemical window solvents for use in electrochemical devices and electrolyte solutions incorporating such solvents. With respect to Claim 1, Angell et al. disclose the synthesis of a polymer electrolyte containing at least one boron atom (see Examples 14 & 15 of this reference, pages 25 & 26). With respect to Claim 3, Angell et al. disclose that oxygen hetero-atoms are contained in the polymers (Examples 14 & 15). With respect to Claim 18, Angell et al. teach a polymer electrolyte comprising a polymeric compound containing at least one boron atom. With respect to Claims 19 & 20, Angell et al. teach that the boron containing polymeric electrolytes can comprise nonaqueous, aprotic solvents (Examples 14 & 15). With respect to Claim 29, Angell et al. teach the use of a polymer electrolyte containing at least one boron atom in an electrochemical device (Examples 16 & 17). With respect to Claim 30, Angell et al. teach a rechargeable lithium battery comprising an anode, cathode and a polymer electrolyte that contains at least one boron atom (Examples 16 & 17). With respect to Claim 31, Angell et al. teach a cathode made of a double metal oxide and an

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anode made of lithium metal or a lithium alloy (Examples 16 & 17). This reference, therefore, anticipates Claims 1, 3, 18-20 & 29-31 of the current application.

Claims 1, 3, 21 & 25 are rejected under 35 U.S.C. 102(b) as being anticipated by Nishikitani et al. (JP 8-273653).

Nishikitani et al. disclose a separator for an alkaline battery that is formed by cross-linking polyvinyl alcohols with tetraboric acid derivatives. With respect to Claim 1, Nishikitani et al. disclose a polymer electrolyte containing at least one boron atom (see page 4 of this reference). With respect to Claim 3, Nishikitani et al. disclose that oxygen hetero-atoms are contained in the polymers. With respect to Claim 21, Nishikitani et al. disclose a polymeric compound having a tetravalent boron atom (page 4). With respect to Claims 25, Nishikitani et al. disclose electrolytic salts containing lithium (page 4). This reference, therefore, anticipates Claims 1, 3, 21, & 25 of the current application.

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(e) the invention was described in-

(1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effect under this subsection of a national application published under section 122(b) only if the international application designating the United States was published under Article 21(2)(a) of such treaty in the English language; or

(2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that a patent shall not be deemed filed in the United States for the purposes of this subsection based on the filing of an international application filed under the treaty defined in section 351(a).

Claims 1 & 3 are rejected under 35 U.S.C. 102(e) as being anticipated by Tatsuo et al. (JP

11 54151).

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With respect to Claim 1, Tatsuo et al. disclose a base material for an ion-conductive polymeric material that contains boron atoms in the form of a boroxide ring (see pages 2, 4 & 5 of this reference). With respect to Claim 3, a boroxide ring, by definition, contains oxygen atoms with the molecular structure. This reference, therefore, anticipates Claims 1 & 3 of the current application.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 26 & 27 are rejected under 35 U.S.C. 103(a) as being unpatentable over Nishikitani et al. (JP 8-273653) in view of Kono et al. (U.S. Patent No. 6,019,908).

Nishikitani et al. teach polymer electrolytes containing at least one boron atom. Nishikitani et al. also disclose electrolytic salts of these electrolytes that use sodium as the positive ion (page 4). Nishikitani et al. fail to teach the use of lithium ions.

Kono et al. disclose ion conductive polymer electrolytes comprising an organic polymer framework, an electrolyte salt and an organic solvent. Kono et al. teach that ion conductivity in ion-conductive polymer electrolytes can be improved by using soluble electrolyte salts (column 1, lines 52-67). Kono et al. go on to disclose that the soluble electrolyte salts doped into the polymer electrolyte can be alkali metals and alkaline earth metals such as Li and Na (column 4, lines 45-61).

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Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention as a whole was made to incorporate lithium ions, as taught by Kono et al., into the invention of Nishikitani et al. since Kono et al. teach that the use of soluble electrolyte salts doped into a polymer electrolyte can lead to improved ion-conductivity.

Allowable Subject Matter

Claims 2, 5-9, 22-24 & 28 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims. The following is a statement of reasons for the indication of allowable subject matter: The prior art of record fails to teach or suggest the molecular structures claimed by the applicants as the moieties within the polymer framework.

Conclusion

The prior art made of record and not relied upon is considered pertinent to applicant's disclosure: JP 10 2331366 to Tatsuo et al, who disclose a tetrasiloxylaluminate containing polymer for use as an ion-conductive electrolyte and only allude to a boron containing ion-conductive electrolyte.


Any inquiry concerning this communication or earlier communications from the examiner should be directed to Donald Scaltrito, whose telephone number is 703.305.4926. The examiner can be reached in his office on Monday-Friday between the hours of 9am to 6pm.

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If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Randy Gulakowski, may be reached at 703.308.4333. The official fax number for the organization where this application or proceeding is assigned is 703.305.3599.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is 703.308.0661

Donald Scaltrito
Patent Examiner
Art Unit 1746
April 7, 2003



RANDY GULAKOWSKI
SUPERVISORY PATENT EXAMINER
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